NEILL

ON THE

VEINS & LYMPHATICS

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OUTLINES

OF THE

VEINS AND LYMPHATICS:

WITH SHORT DESCRIPTIONS.

DESIGNED FOR THE USE OF MEDICAL STUDENTS.

BY JOHN NEILL, M.D.,

Demonstrator of Anatomy in the University of Pennsylvania, Lecturer on
Anatomy in the Medical Institute of Philadelphia, &c., &c., &c.

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PHILADELPHIA:
ED. BARRINGTON & GEO. D. HASWELL.
1847.

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TO

STUDENTS OF MEDICINE

ERRATA.

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Page 26, second line, *read* Plate VI. *instead of* Plate VII.

PREFACE.

This little volume is intended to accompany two of a similar kind, which have already been published, on the Arteries and Nerves.

The same plan has been pursued as in the former publications, viz: that of presenting the principal vessels only, and having the names upon them, or near them, so as to avoid the inconvenience of the usual mode of reference.

For them we disclaimed any attempt at originality or novelty, but hoped that they would be beneficial mainly to an interesting portion of the profession—Medical Students. This companion upon the Veins and Lymphatics we desire should occupy an equally humble but useful position; feeling fully compensated for our labour if Students should find that this work facilitated their studies, by enabling them to save time, and also to obtain a clear and concise view of the Nervous and Lymphatic Systems.

JOHN NEILL.

Philadelphia, 1847.
No. 295 Spruce street.

INDEX.

Axillary 18
Azygos 22

Basilic 17
Bronchial 22

Capsular 25
Cavernous Sinus . . . 14
Cephalic 17
Cephalica Pollicis . . 17
Circular Sinus . . . 14
Coronary 11

Emissaries of Santorini . . 14

Facial 11
Femoral 20

Hemiazygos . . . 23
Hemorrhoidal Plexus . . 23
Hepatic 25

Iliac 24
Iliac External . . . 23
Iliac Internal . . . 23
Innominata . . . 22
Intercostal Superior . . 23
Internal Maxillary . . 12

Jugular External . . 15
Jugular Internal . . 15

Lacteals 28
Lateral Sinus . . . 13
Longitudinal Sinus . . 13
Lymphatics . . . 28

Median 18
Median Basilic . . . 18
Median Cephalic . . 18

Mesenteric Inferior . . 26
Mesenteric Superior . . 26
Middle Sacral . . . 24

Occipital Sinuses . . 14

Petrosal Sinuses . . 13
Popliteal 20
Portal 26

Ranine 11
Renal 25

Saphena External . . 20
Saphena Internal . . 21
Satellites . . . 7
Spermatic . . . 24
Spheno-Palatine . . 12
Splenic 26
Subclavian . . . 19
Submental . . . 11
Supra-Orbital . . . 11

Temporal . . . 11
Thoracic Ducts . . . 29
Thyroid Inferior . . 15
Thyroid Superior . . 11
Torcular Herophili . . 13
Transverse . . . 22

Uterine Plexus . . . 24

Valves 9
Vena Cava Inferior . . 24
Vena Cava Superior . . 22
Venæ Galeni . . . 14
Vena Salvatella . . 18
Vertebral . . . 16
Vesical Plexus . . . 24

THE VEINS.

The Veins collect the blood from all parts of the body, and return it to the heart. They are more numerous than the arteries, have much thinner walls, and are tortuous in their course. They are divided into two kinds; viz., Superficial, and Deep Veins.

The *Superficial Veins* are beneath the skin, and very visible when distended; they anastomose freely, and very irregularly.

The *Deep Veins*, called Venæ *Comites* or *Satellites*, accompany the arteries, and are double their number; there generally being two veins with each artery.

Like the arteries they have *three coats:* the external is cellular; the middle is fibrous; and the internal is thin and delicate, resembling a serous membrane.

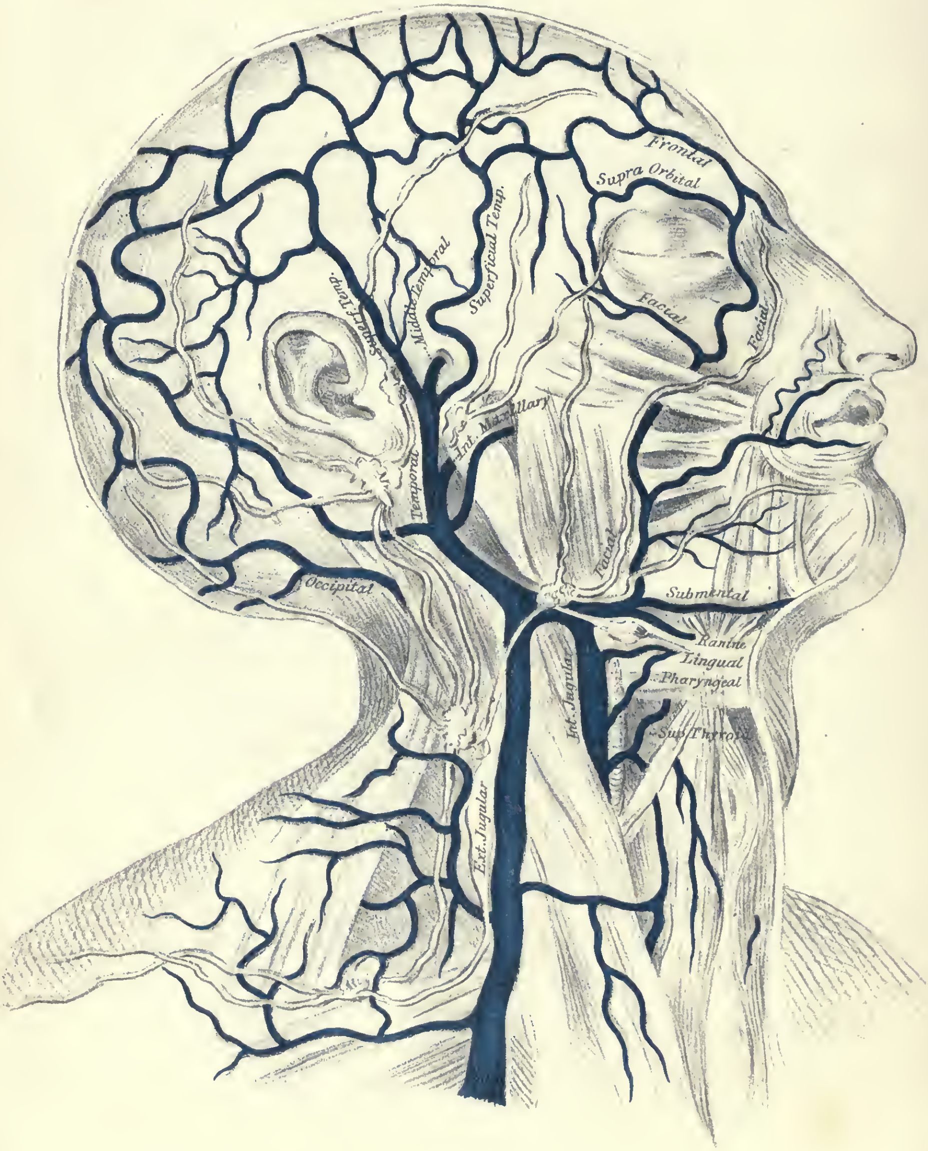
The *Valves* of the veins are formed by duplicatures of the internal coat, and are semicircular. They usually exist in pairs, and open toward the heart. They are more numerous in the superficial veins, and in the veins of the lower extremities. They are deficient in the branches of the portal veins, except the vasa brevia; in the umbilical, cervical, and median veins; in the veins of the spine, kidneys, and womb; and in the ascending and descending vena cava.

The veins are elastic and vascular, being supplied by small vessels called vasa vasorum.

There are some venous channels in the structure of an organ lined by the serous or internal coat of the veins, which are called *Sinuses;* as, for example, in the membranes of the brain and in the liver.

The veins of the head, neck, and upper extremities and thorax, unite to form the descending vena cava; and the veins of the abdomen and lower extremities coalesce to form the ascending cava: both of these large trunks emptying into the right auricle of the heart.

Veins and Lymphatics. *Plate I.*



P.S. Duval, Lith. Phil.ª

W. L. del

VEINS OF HEAD AND NECK.

PLATE I.

The venous blood from the scalp is returned by veins which, for the most part, accompany the arteries; though there is less regularity in the anastomosis of the smaller twigs. The principal veins of the face are the following:

Facial.—This vein commences in the internal canthus of the eye by the junction of the *supra-orbital*, frontal, and others, and crosses the face obliquely, in company with the facial artery, until it reaches the base of the lower jaw in front of the masseter muscle, where it joins the internal jugular most frequently, but sometimes the external. There is a communication always between the two jugular veins at this point.

It receives in its course the *coronary* and *submental* veins which accompany arteries of the same name.

Ranine.—This vein is very superficial, and can be seen under the tongue, passing near the frænum and emptying into the facial.

Superior Thyroid.—This conveys some of the blood from the thyroid gland into the facial veins, and accompanies the superior thyroid artery.

Temporal.—The superficial temporal and middle temporal concur to form the temporal which, passing over the zygoma, penetrates the parotid gland in company with the artery;

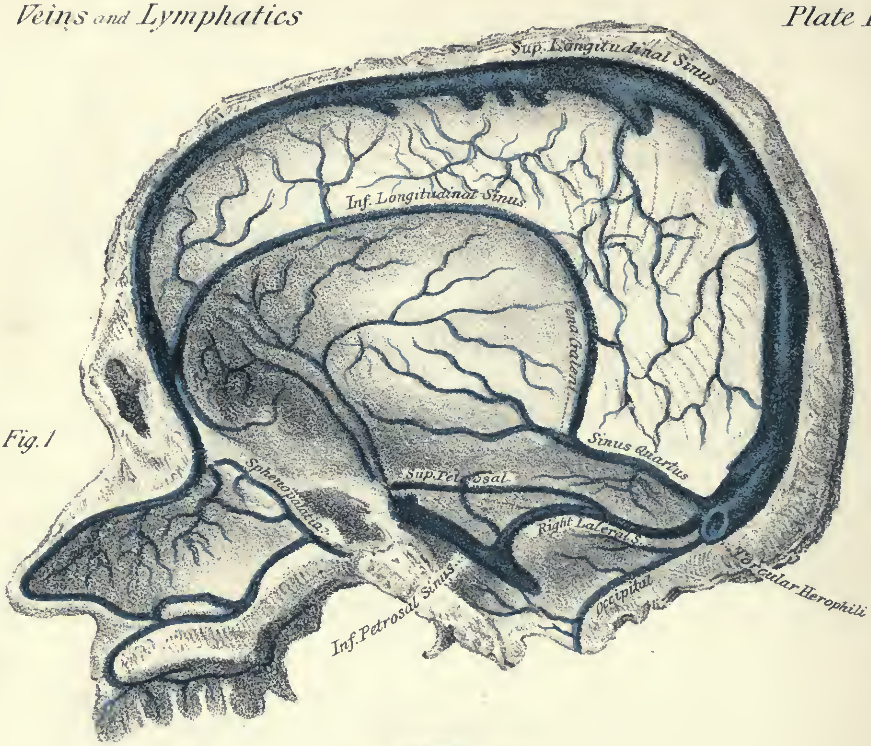
upon emerging, it constitutes the commencement of the *external jugular.*

Internal Maxillary.—This vessel receives blood from the bottom of the zygomatic fossa, nose, palate, &c., and empties it into the temporal: one of the branches which form it, is called

Spheno Palatine.—A vein which communicates with the sinuses at the base of the cranium by small veins, called emissaries of Santorini.

Veins and Lymphatics *Plate II.*

Fig. 1



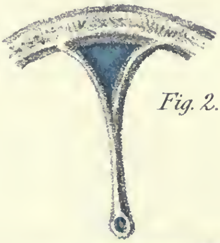
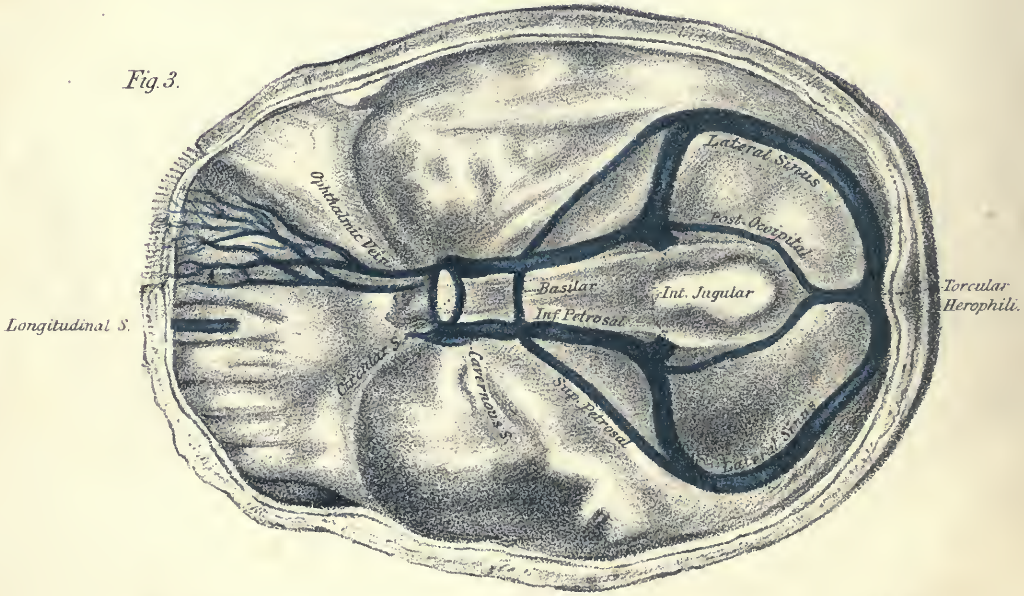


Fig. 2.

Fig. 3.



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SINUSES OF THE DURA-MATER.

PLATE II.

The venous blood is conveyed from within the head by means of channels formed between the lamina of the dura-mater, called sinuses.

Superior Longitudinal Sinus—Commences by a small vein which passes through the foramen cœcum of the frontal bone from the nose. It is arched in its course, and prismatic in its shape, extending along the superior edge of the falx cerebri. It receives ten or twelve large veins from the pia-mater which open obliquely forwards, in a direction contrary to the course of blood in the sinus. Near its posterior part are found a number of the glands of Pacchioni. This sinus terminates at the internal occipital cross in the Torcular Herophili, a venous enlargement made by the junction of several sinuses.—(Figs. 2 and 3.)

Lateral Sinus—Proceeds on each side from the Torcular Hierophili, in the base of the tentorium, then descends and terminates at the foramen lacerum posterius in the internal jugular vein. The shape of these channels is oval.

Sinus Quartus or Rectus—Is situated at the junction of the falx cerebri and tentorium. It runs backwards and joins the Torcular Herophili. It is prismatic in its shape.

Inferior Longitudinal Sinus—Is found at the inferior edge of the falx cerebri. It is smaller than the superior, and is semicircular in its course. It terminates in the anterior portion of the straight sinus.

Petrosal Sinuses.—There are two on each side—the superior and inferior. The superior is the smaller, and passes from the cavernous sinus backwards along the edge of the petrous portion of the temporal bone, and joins the lateral sinus. The inferior petrosal sinus passes also from the cavernous sinus, along the junction of the occipital and petrous portion of the temporal bone, and opens into the lateral sinus as it is about to emerge at the foramen lacerum posterius.

Venæ Galeni—Are two veins of the velum interpositum, which empty into the straight sinus, by means of the vena azygos.

Cavernous Sinuses—Are placed upon either side of the sella turcica. Their shape is irregular, and their structure cellular. Each has the internal carotid artery; the third, fourth, first branch of the fifth, and sixth nerves passing through it, or, more properly, between the lamina of which it is formed. It is joined in front by the ophthalmic vein, which brings the venous blood from the orbit of the eye, and anastomoses with the veins of the face.

Circular Sinus—Is placed in the sella turcica, surrounding the pituitary gland, and communicates on either side with the cavernous sinus.

Anterior Occipital Sinus—Extends across the basilar process of the occipital bone, forming a communication between the two cavernous sinuses.

Posterior Occipital Sinus—Extends along the base of the falx cerebelli, from the Torcular Herophili to the foramen magnum occipitis, where it bifurcates. Each division making a communication with the lateral sinus at the foramen lacerum posterius.

Emissaries of Santorini—Are small canals which connect the sinuses with the external veins through small foramina in the cranial cavity. The largest pass through the mastoid, parietal, and posterior condyloid foramina.

VEINS OF THE NECK.

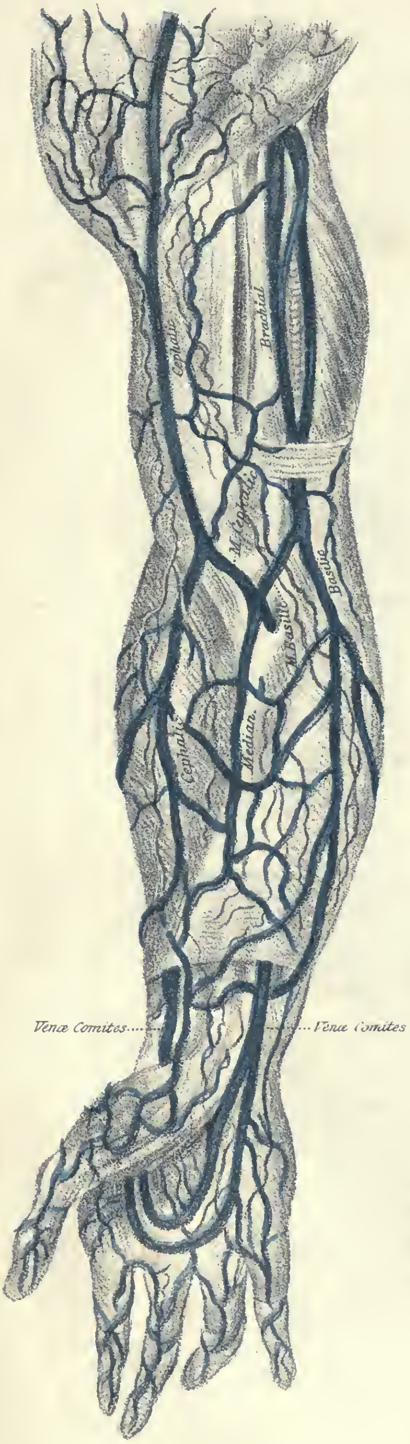
PLATE I.

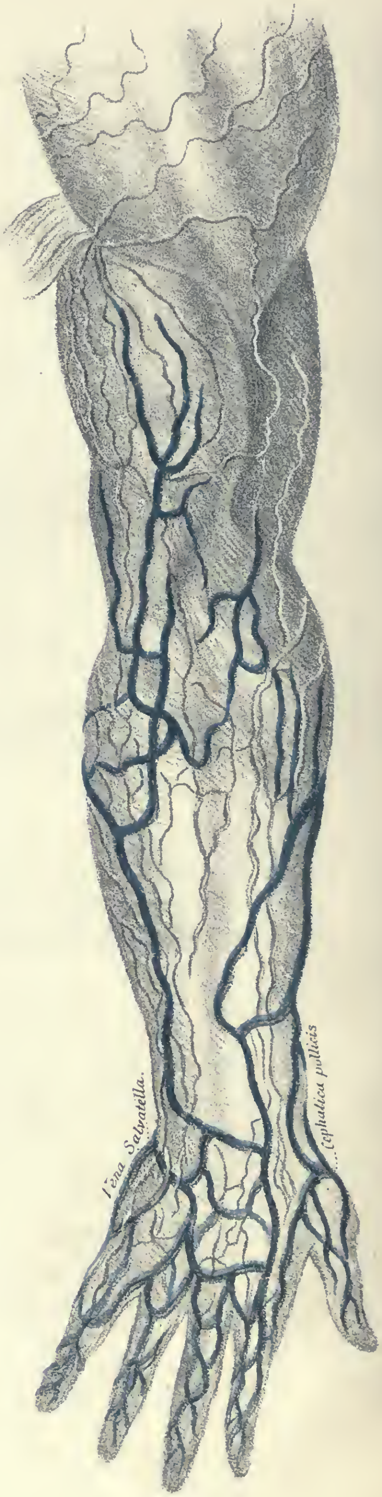
External Jugular.—Commences at the termination of the *temporal*, near the angle of the lower jaw, where it receives a branch from the facial. Passing perpendicularly and superficially down the back, it crosses the sterno-cleido-mastoid muscle, whose position is oblique; upon the outer margin of the origin of this muscle it opens into the subclavian just behind the clavicle. The vein is very frequently selected for *phlebotomy* in children. It is not regular in its stage or course; though generally it is increased in its descent by the function of cutaneous veins.

Inferior Thyroid—Is situated upon the side of the trachea, and receives the blood from the thyroid gland. It empties into the innominata.

Vertebral.—This descends in a canal formed by the foramina of the transverse processes of the six superior cervical vertebræ, in company with the vertebral artery. It collects blood from the veins of spinal marrow, and empties into the innominata.

Internal Jugular Vein—Commences at the base of the cranium, as a continuation of the lateral sinus. It descends the neck to the outside of the carotid artery and pneumogastric nerve, all of which are included in the same sheath. It receives in its course the facial, a large communicating branch of the external jugular, the pharyngeal, and occipital veins. It empties into the subclavian behind the clavicle, and at the internal edge of the scalenus anticus muscle; this junction forms the vena innominata.





P. S. Duval. Lith. Phil^a
W. L. del.

VEINS OF UPPER EXTREMITY.

PLATE III.

The veins of the upper extremity are either superficial or deep, and arise from the capillaries.

The *Deep* veins accompany the arteries; thus we have two veins accompanying the radial, and two the ulnar artery, which unite at the elbow and form the two brachial veins which, in like manner with all venæ comites, are placed on either side of the artery. The brachial veins by their junction with the basilic form the *axillary vein.*

The *Superficial* veins of the upper extremity traverse the superficial fascia.

Cephalic Vein.—This commences upon the thumb and forefinger by a small vein called *cephalica pollicis;* ascending the forearm upon the radial side it is constantly increased by the accession of small branches which anastomose freely with each other on the back of the arm. At the bend of the elbow it is joined by the median cephalic, and then ascends the arm at first upon the outer side of the biceps flexor cubiti, and then along the interstice between the pectoralis major, and deltoid muscles. In this groove it runs in connection with a branch of the acromial thoracic artery. When it has reached to within a few lines of the clavicle it disappears, descending to join the subclavian vein. Refer also to Plate ~~VI.~~

VII

Basilic.— The commencement of this vein is a small vein called *vena salvatella*, which runs along the back of the hand from the little finger. Afterwards ascending the posterior edge of the ulna, it constitutes the posterior trunk of the basilic. The anterior trunk commencing upon the palm of the hand joins the posterior at the elbow.

It is larger than the cephalic, and at the elbow is joined by the median basilic; it then ascends upon the inner side of the biceps muscle, and about the middle of the arm pierces the brachial fascia, and by a junction with brachial veins forms the axillary vein.

Median.— This is more irregular in its origin than either the basilic or cephalic, and is somtimes entirely wanting. It is formed by the conjunction of small branches which arise upon the palm, wrist, and forearm. Ascending upon the anterior face of the forearm it divides into two branches before it reaches the elbow, one of which, the

Median Cephalic, ascends outwardly for an inch or two and joins the cephalic vein. Under the median cephalic vein passes the external or musculo-cutaneous nerve.

Median Basilic. — This is the other branch of the median which, ascending obliquely inwards, overlays the brachial artery. It is usually selected for the operation of bleeding.

The internal cutaneous nerve sends a branch under this vein, and sometimes a small filament over it.

Axillary Vein.— This vein, formed by the brachial and basilic veins, extends from the lower edge of the armpit to the under surface of the clavicle. It is placed in front and below the axillary artery, and is much involved with the axillary plexus of nerves. It receives the anterior and posterior circumflex, scapular, and thoracic veins.

Subclavian.—This is a continuation of the axillary, and extends to the innominata. It passes under the subclavian muscle, and in front of the subclavian artery. It is separated, however, from the artery, by the scalenus anticus muscles. The vein goes in front of this muscle, and the artery passes behind. Its junction with the internal jugular forms the innominata.

VEINS OF THE LOWER EXTREMITIES.

PLATE IV.

The *deep* veins are two in number for each artery in the lower as in the upper extremity.

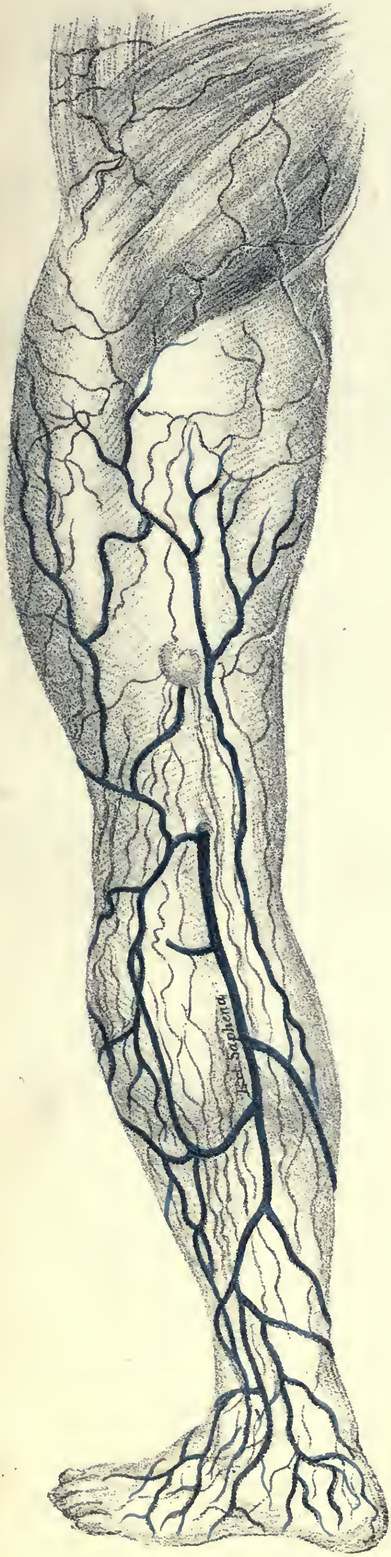
Popliteal.—This vein is formed by the juncture of the venæ comites of the anterior and posterior tibial arteries. It extends from behind the knee to the perforation in the tendon of the adductor magnus, which transmits the femoral artery.

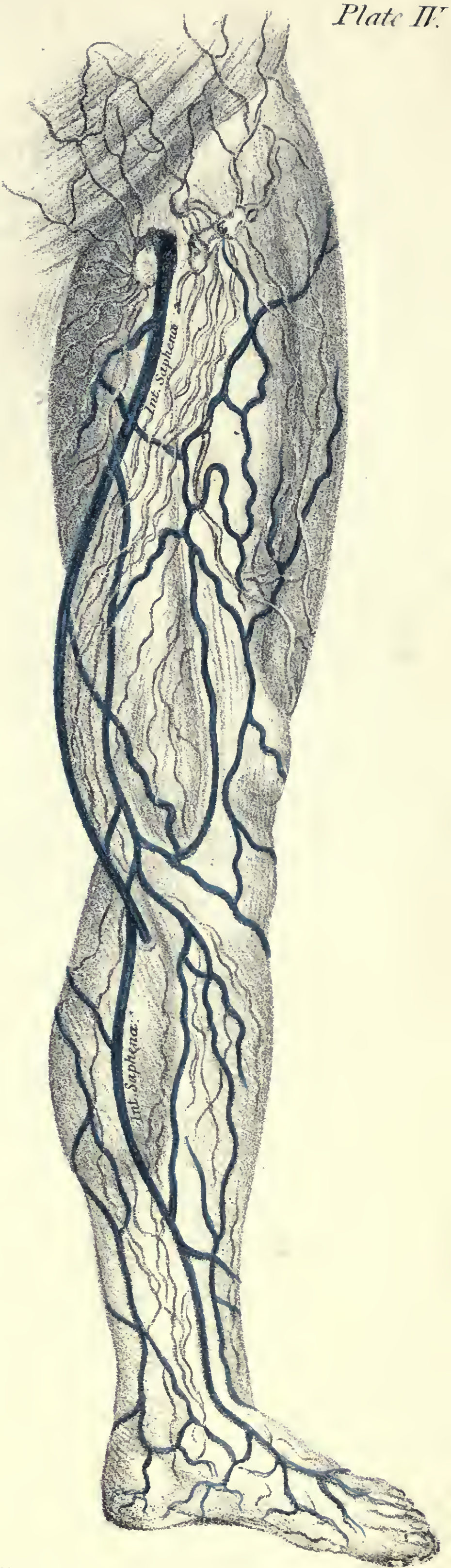
Femoral.—Extending from the perforation of the adductor magnus muscle, it ascends the thigh with the femoral artery to Poupart's ligament, where it becomes the external iliac vein. At first it is situated upon the outside of the artery; it then takes a position behind that vessel, and at Poupart's ligament lies upon the inner side. It receives the profunda and superficial veins.

The *superficial* veins are the *external saphena* or *saphena minor;* and the *internal saphena*, or *saphena major.*

External Saphena.—The venous blood from the outer side of the foot and leg is collected by this vein, which passes behind the outer ankle and, ascending upon the back of the leg over the space between the two heads of the gastrocnemius muscle, penetrates the *deep* fascia to join the popliteal vein. It is accompanied in its course by the external saphena nerve.

Plate IV.





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Internal Saphena—Commences upon the inner side of the foot and ankle. It ascends upon the inner side of the leg and, passing behind the internal condyle of the femur, continues to ascend along the inner side of the thigh to the saphenous opening, where it joins the femoral vein. It is accompanied by the internal saphena nerve until it reaches the knee. It sometimes consists of two trunks, which do not join until they reach the saphenous opening.

VEINS OF THE TRUNK.

PLATE V.

The Venæ Innominatæ, or Bracheo Cephalic Veins, are too large trunks formed on each side by the junction of the internal jugular and the subclavian. The *right* descends almost vertically, is external to, and in front of the arteria innominata; it is about an inch and a quarter in length and, with that of the left side, forms the vena cava descendens. The *left* is much the longer; and crossing obliquely from left to right, in front and above the aorta, it joins that of the right side. On account of its direction it is frequently called the *transverse vein.*

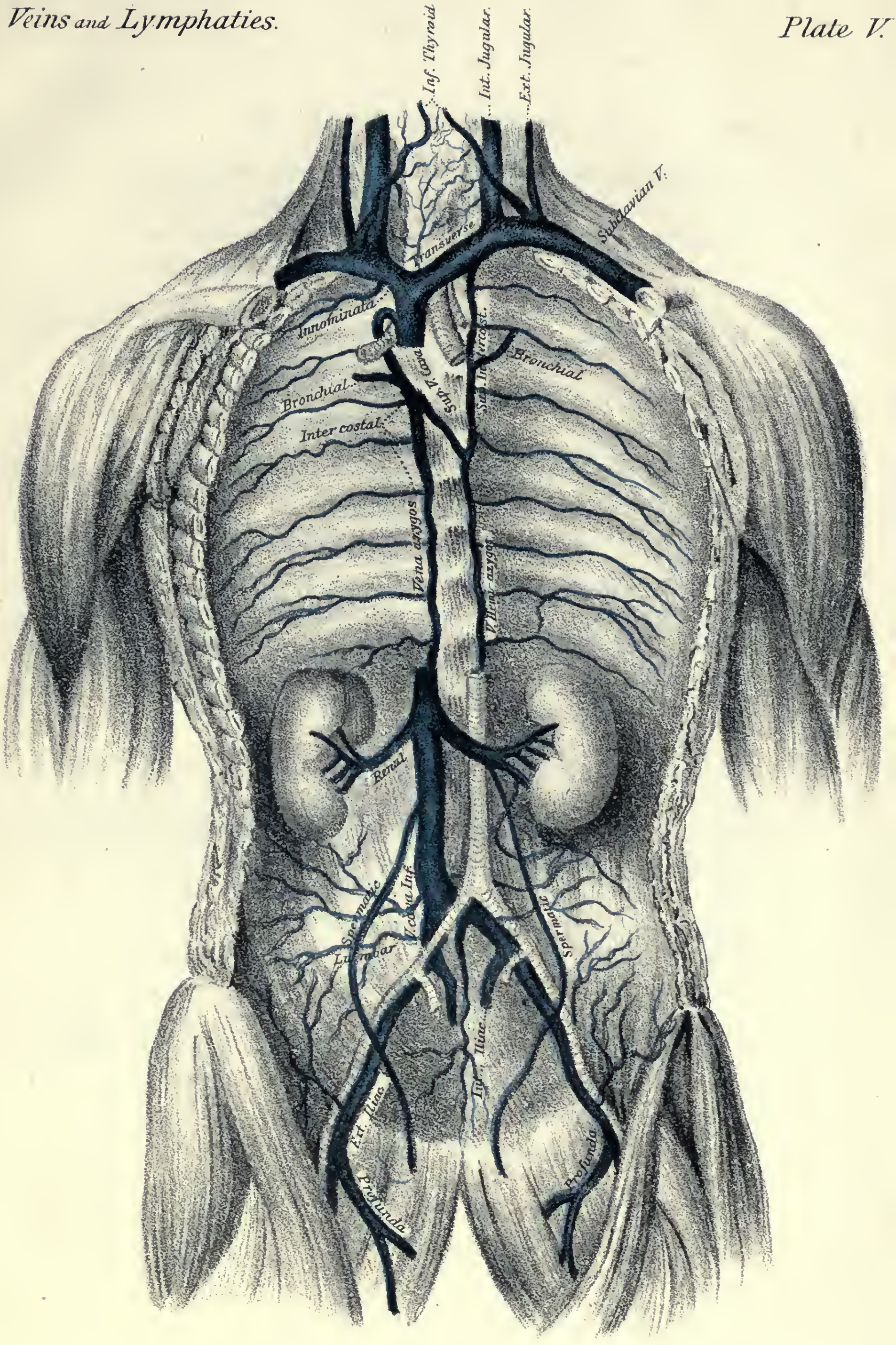
The Descending Vena Cava—Is formed by the junction of the two last, and is about three inches in length. Descending from the cartilage of the first rib on the right side, it empties into the superior and posterior part of the right auricle of the heart. Its course is not entirely vertical, but inclines forward into the left side.

Bronchial Veins.—These bring the venous blood from the parenchyma of the lungs, accompanying the bronchial artery. The *right* empties into the vena azygos, and the *left* empties into the left superior intercostal.

Vena Azygos.—It commences in the right lumbar region by a communication with the lumbar veins, or the vena cava ascending. Passing through the foramen aorticum of the diaphragm it enters the posterior mediastinum, and ascending upon the right side of the vertebral column, it arches

Veins and Lymphaties.

Plate V.



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W. L. dell.

forwards over the root of the right lung, and empties in the descending cava. It receives in its course the ten inferior intercostal veins of the right side, and right bronchial vein.—(Refer also to Plate VIII., Fig. 1.)

Vena Hemiazygos.—This commences also in the lumbar region but upon the left side, receiving the venous blood from five or six inferior intercostal veins of that side, and, communicating also with the left superior intercostal, it crosses the fifth or sixth dorsal vertebra and enters into the vena azygos.

Superior Intercostal Veins.—That of the *right* side conveys the venous blood from the two superior intercostal spaces into the right innominata. It is sometimes deficient. That of the *left* is much larger. It receives blood from the six or eight intercostal spaces, and communicates with the vena hemiazygos. It empties into the left innominata.

External Iliac—Commences at Poupart's ligamentand, passing along the brim of the pelvis, is joined at the sacro iliac lymphysis by the internal iliac vein, which junction forms the common iliac. It is a continuation of the femoral vein, and at first is upon the inner side of its corresponding artery but gradually passes behind it. It receives the epigastric and circumflex ilii veins just above Poupart's ligament.

Internal Iliac or Hypogastric.—It is formed in the inferior portion of the pelvis, and receives the returning blood from the glutial, ischiatic, and obturator veins, and also from the vesicle, uterine, and hemorrhoidal plexuses.

Hemorrhoidal Plexus—Is an anastomoses of veins, surrounding the lower portion of the rectum, which communicates with the portal vein.

Vesical Plexus.—It surrounds the neck of the bladder and, collecting the venous blood from the organs of generation, communicates freely with the internal iliac vein.

Uterine Plexus—Is situated upon the sides of the uterus between the laminæ of the broad ligaments, communicating freely with the ovarian and internal iliac veins.

Common Iliac Vein—Is formed by the union of the external and internal iliac veins. That of the *right* side is shorter, and ascends more obliquely behind the corresponding artery than that of the *left*, which it joins upon the intervertebral substance between the fourth and fifth lumbar vertebra.

Middle Sacral Vein—Discharges into the left common iliac, or into the junction of the iliacs.

Ascending Vena Cava—Ascends from the fourth lumbar vertebra along the right side of the vertebral column. It passes through the foramen quadratum in the tendinous centre of the diaphragm, and empties into the inferior and posterior part of the right auricle. It is larger than the descending cava, and receives the following veins in its course:

Lumbar Veins.—These are four or five in number, and return the blood from the muscles and integuments of the loins.

Spermatic Veins.—These bring the blood from the testicles. That of the *right* side empties into the vena cava; and that of the left empties into the *left* renal vein. In the female they are called ovarian veins, which collect the blood from the ovaries, fallopian tubes, &c., and empty as in the male.

Renal or Emulgent Veins.—They return the blood from the kidneys. That of the *left* side is longer than that of the *right*, and passes in front of the aorta.

Capsular Veins.—Come from the capsular renales. That of the *left* side empties into the left emulgent, and that of the *right* side into the vena cava.

Hepatic Veins—Originate in the liver, and discharge themselves at the posterior notch into the vena cava, which is adherent to that portion of the liver situated between the lobulus Spigelii and right lobe of the liver.

PORTAL VEIN.

PLATE VII AND VIII, FIG. 2.

This vein is formed by the junction of the veins of the chylopoietic viscera, viz.:

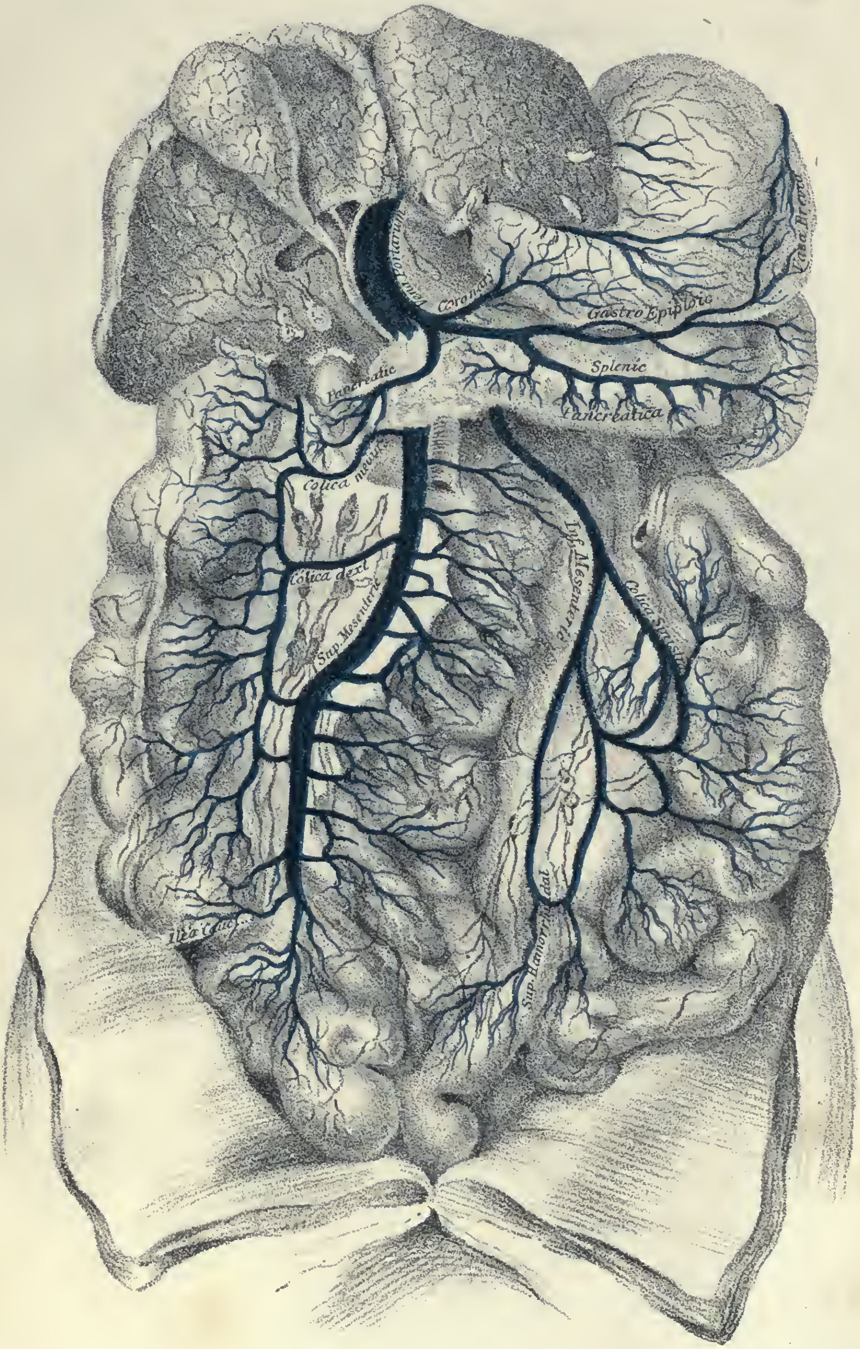
Splenic Vein —Commences in the spleen and, emerging at its fissure, pursues a transverse course along the superior margin of the pancreas, and joins the superior mesenteric.

The gastric and gastro-epiploic veins of the stomach return the blood from that organ into the splenic veins.

Inferior Mesenteric Vein—Conveys the blood from the rectum, hemorrhoidal plexus, and descending colon; ascending, it passes beneath the pancreas and terminates in the splenic vein.

Superior Mesenteric Vein.—It is the largest vessel entering into the formation of the portal vein, and receives the blood from the small intestines and a portion of the large. It ascends in the mesentery and passes in front of the duodenum and behind the pancreas, where it is joined by those veins last mentioned.

The *Portal Vein* being thus formed is included in the capsule of Glisson, which is enveloped by the right edge of the lesser omentum. It extends from left to right to the transverse fissure of the liver, and is about four inches in length; at



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which point it divides into two large branches, called *right and left portal sinuses*, which are at right angles with the portal vein.

LYMPHATICS.

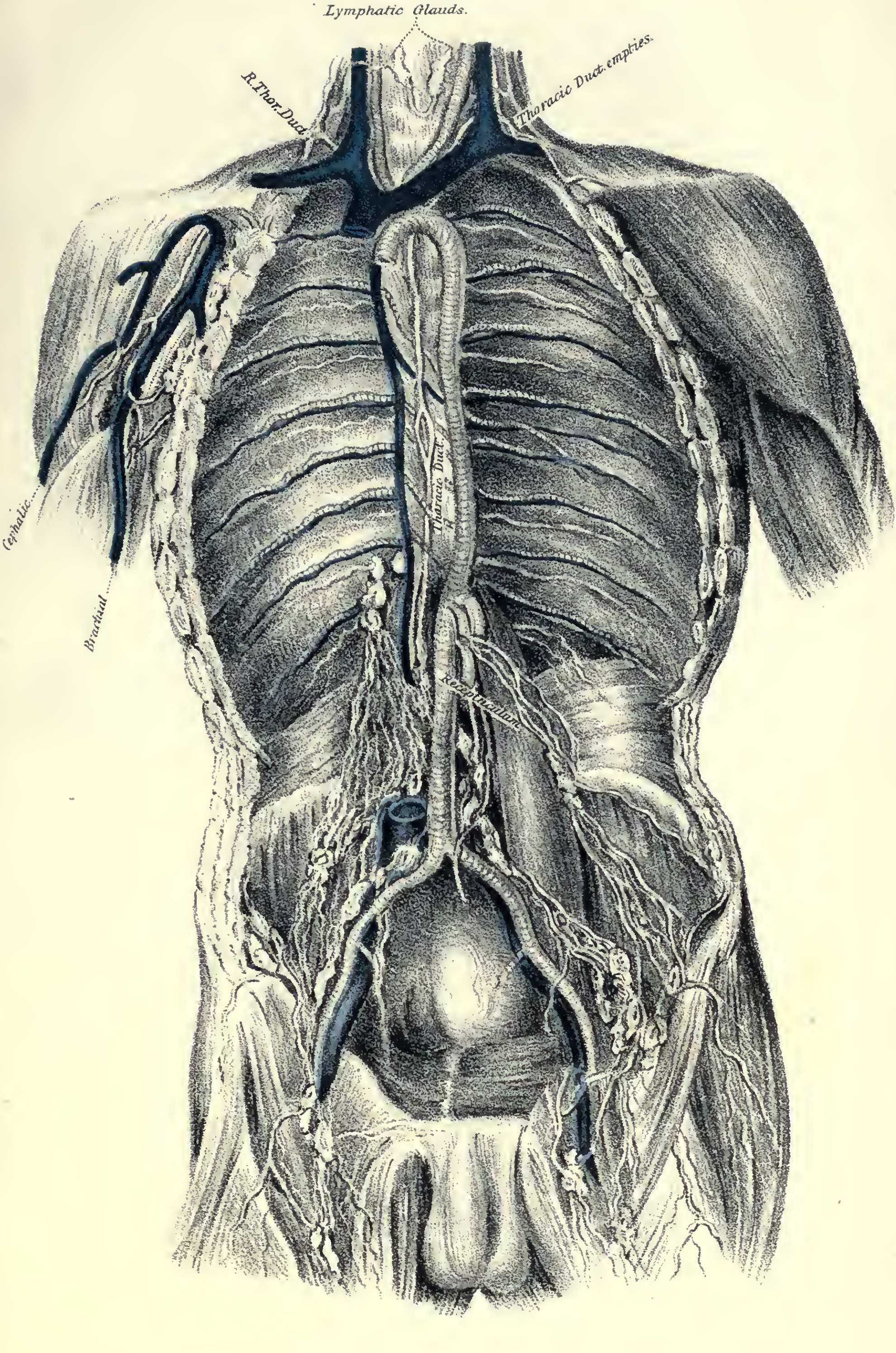
The Lymphatics are a set of small delicate vessels found in almost every portion of the body, conveying different products into the system, and coursing towards the root of the neck. They are transparent, very much of the same size, form frequent anastomoses, and present a knotted appearance, owing to the existence of their valves.

They are interrupted in their course by a number of glands, called lymphatic glands, which are of an oval or rounded shape, usually of a pale, pink colour, lobular in their appearance, and well supplied with arteries, veins, and nerves. The lymphatic vessels which enter these glands are called vasa inferentia and are more numerous than those which emerge from them, which are called vasa efferentia.

The superficial lymphatics are found in the course of the superficial veins, and connect themselves with the superficial glands of the neck, pit, groin, &c. The deep lymphatics are found in connection with the large veins, and enter the deep lymphatic glands, which are most numerous round the iliac veins and inferior vena cava.

Lymphatics of the Small Intestines—Are called *lacteals.* They are placed between the two laminæ of the mesentery, and are associated with numerous glands. Receiving the chyle by means of the villi they convey it to the left thoracic duct.

Veins and Lymphatics.



P. S Duval Lith. Phila

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Veins and Lymphatics

Plate VIII.

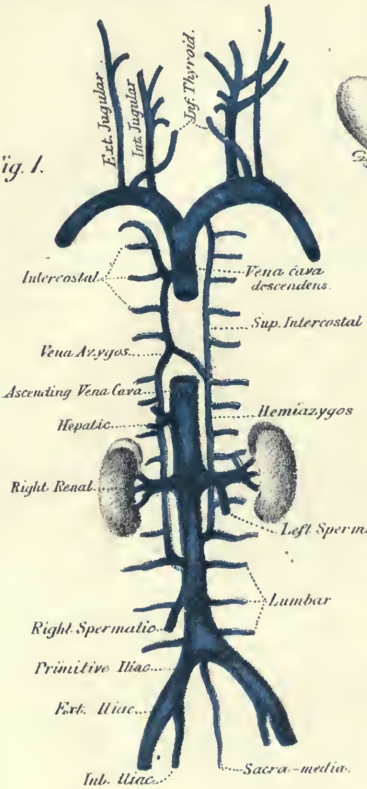

Fig. 1.

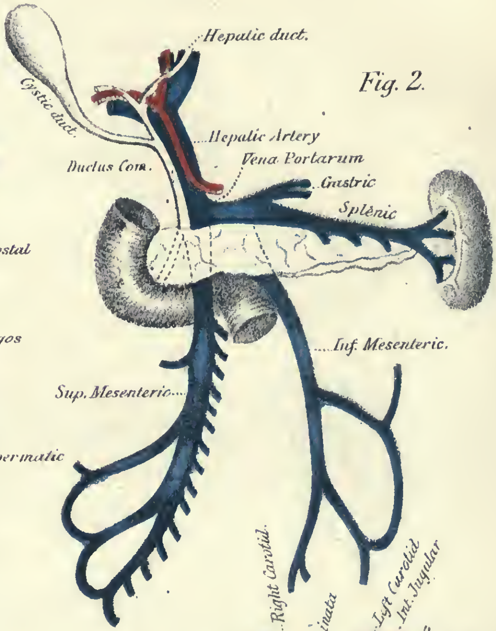

Fig. 2.

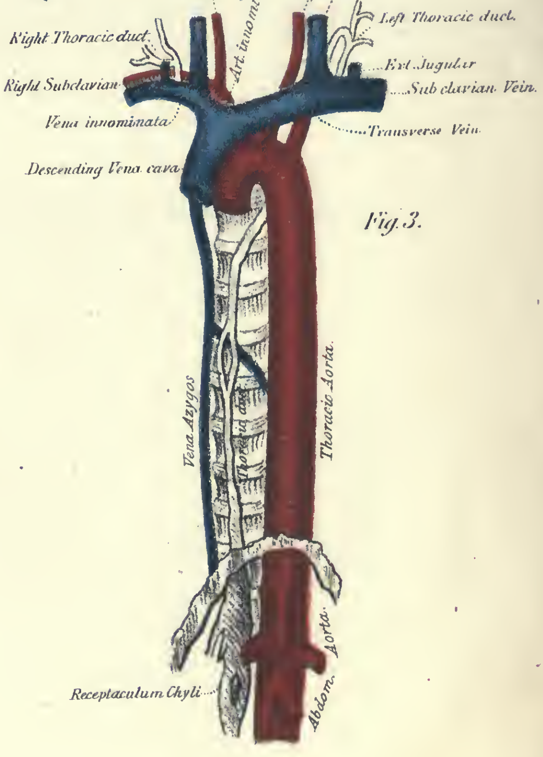

Fig. 3.

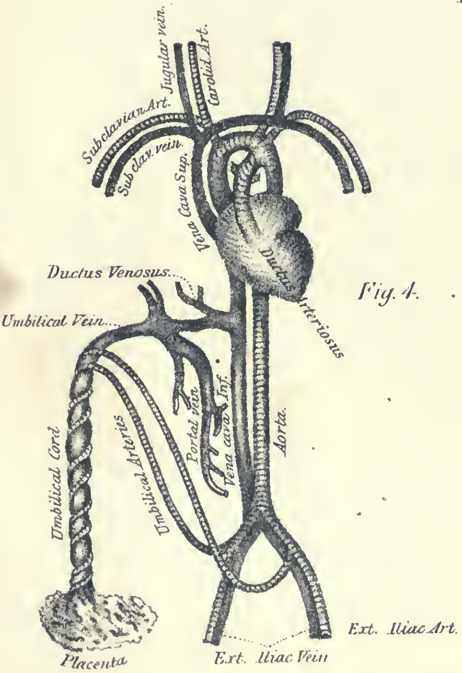

Fig. 4.

P.S.Duval, Lith. Phil^a

W.L. del.

Left Thoracic Duct—Commences in the abdomen by an enlargement, called the *receptaculum chyli*, which is formed by the junction of the deep lymphatics, and is situated upon the body of the second lumbar vertebra. It passes through the foramen aorticum of the diaphragm, and ascends in front of the dorsal vertebra between the aorta and vena azygos. Inclining to the left side, it then passes behind the arch of the aorta and, reaching as high as the seventh cervical vertebra, it then makes a sudden curve forwards and downwards, and terminates at the junction of the left subclavian with the left internal jugular. It is about the size of a goose quill at its commencement, but often becomes smaller in its middle, or divides into two trunks which re-unite before its termination. It has fewer valves than most lymphatic trunks.

Right Thoracic Duct—Is a short trunk which receives the lymphatics of the right side of the head and superior extremity. It empties into the junction of right internal jugular vein and right subclavian vein.

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